cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

Products & Services

FertExpert - Coffee

An innovative solution to calculate the fertilizer formula most suited to the actual conditions of each plantation in a group of coffee plantations

Usual fertilizer recommendations

1. **Generic fertilizer:** meets the average needs of the country (e.g. 12-6-20 in Côte d'Ivoire and 22-6-12 in Burundi).
   F **Often not effective** (***soil is not taken into account***)

or

2. **Calculation of fertilizer needs** using "Soil Diagnosis" method (Fertiliser amount = Crop needs – soil nutrients)
   F **Very accurate** but **time consuming & expensive** (***many soil samples***)

Alternatively try the "FertExpert" model

You only need:

- **Survey technicians**
- Smartphone or tablet
- Portable pH-meter

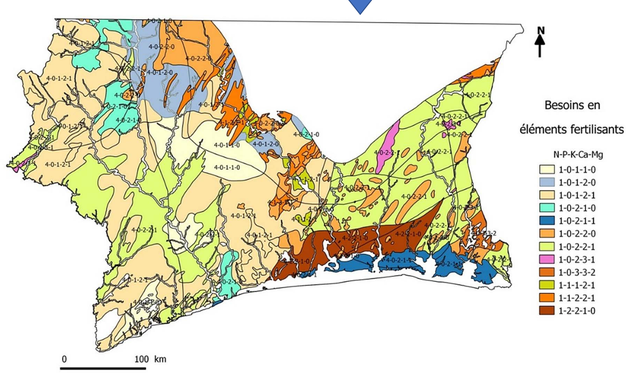
We provide:

- Training to your technicians
- The **FertExpert application**

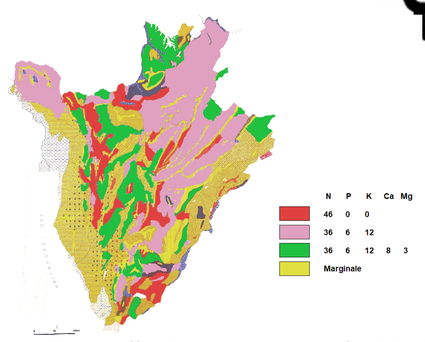
Try me J

GPS coordinates

Forms filling



Côte d'Ivoire - Source : Eponon et al, 2018



Burundi - Source : Snoeck, 2016

Spatial query

Field factor query

Soil:

- Acidity (Portable field pH-meter)
- Organic matter (Soil colour, O horizon, litter)
- Texture & structure (Hand feel)
- Depth, compaction (measuring tape, shovel)

Plot & crops:

- Associated crops (counting)
- Foliar diagnosis (visual)
- Slope … (visual)

The descriptors were adjusted by comparing with results of a soil diagnosis analysis in 140 plots in Côte d'Ivoire and 70 in Burundi.

1. The **map of fertilizer formulas per land unit**:
   Combines the "soil diagnosis" with soil & climate maps.
   F Soil physical nature & average cation needs (amounts & ratios).

2. **Soil factors** and **cultural practices**: Information easy to collect in the field on smartphone application
   F Local and more recent changes in soil fertility.

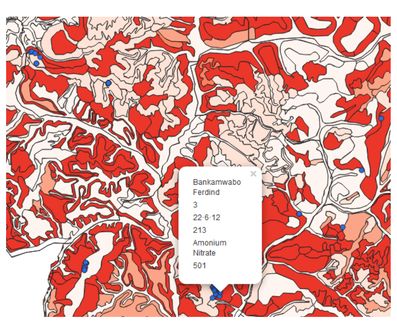
Results

Synthetic table

Ideal fertilisation
&
Closest commercial formulas

Name	ID_parc	Engrais_NPK	Dose_NPK (kg/ha)	Compl_azote	Dose_N (kg/ha)
Ndegeya L	3	22·6·12	300	Urée	-
Mbarushimana E	5	17·17·17	150	Urée	-
Bavakure S	1	22·6·12	200	Urée	50
Bukuru S	2	22·6·12	200	Urée	150
Ndaribwirinda M	8	22·6·12	250	Urée	50
Nzinahora R	10	22·6·12	200	Urée	100
Ciza V	1	22·6·12	200	Urée	250
Minani E	7	22·6·12	200	Urée	150
Nyabenda P	2	22·6·12	200	Urée	100
Binagana L	8	22·6·12	250	Urée	650

&



Interactive map

Ø Fast, cheap and accurate

The tool is ideal for companies, NGOs, government services who have to develop fertilizer recommendations for a large number of farmers. Indeed, it is possible to:

- ü Provide **each farmer with precise and effective formulas** and doses that correspond to the real conditions in their coffee plots;
- ü Get **results quickly and cheaply** because the tool uses existing thematic maps (*no more laboratory analysis*);
- ü **View the** plantations on an interactive map.

The tool suite is available on a CIRAD web portal:
http://fertexpert.cirad.fr

References :

Snoeck, D. (2016). Carte des besoins en engrais sur base de la carte des sols établie par Sottiaux (1988). *Rapport de mission* au **Burundi**.

Eponon, C., Snoeck, D., Kassin, E., Camara, M., Kone, D. (2018). Mapping coffee nutritional requirements in **Côte d'Ivoire**. *Internship report*.

Laurent J-B., Leroux L. (2018) Online Publication of a **Land Cover Map Using LizMap**. *In* : N. Baghdadi, C. Mallet, Z. Mehrez. *QGIS and Generic Tools*. ISTE Edition: 255-269.

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